

# Monthly Marine Biotoxin Report

November 2003

Technical Report No. 03-22

## INTRODUCTION:

This report provides a summary of biotoxin activity for the month of November 2003. Ranges of toxin concentrations are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory that was in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA); (iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

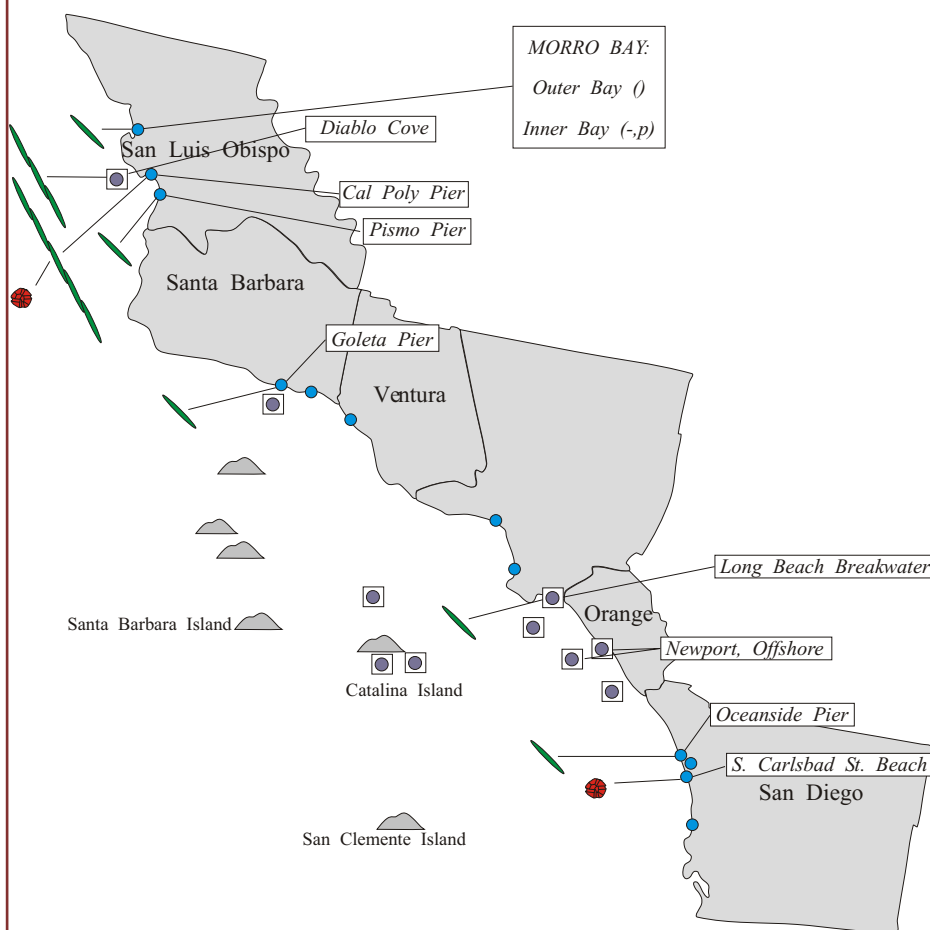
### Southern California Summary:

#### Paralytic Shellfish Poisoning:

*Alexandrium* decreased in numbers at sites along the San Luis Obispo coast during November (Figure 1). Small numbers of this

(Continued on Page 2)

Figure 1. Distribution of toxin-producing phytoplankton in Southern California during November, 2003.



### Relative Abundance of Known Toxin Producers

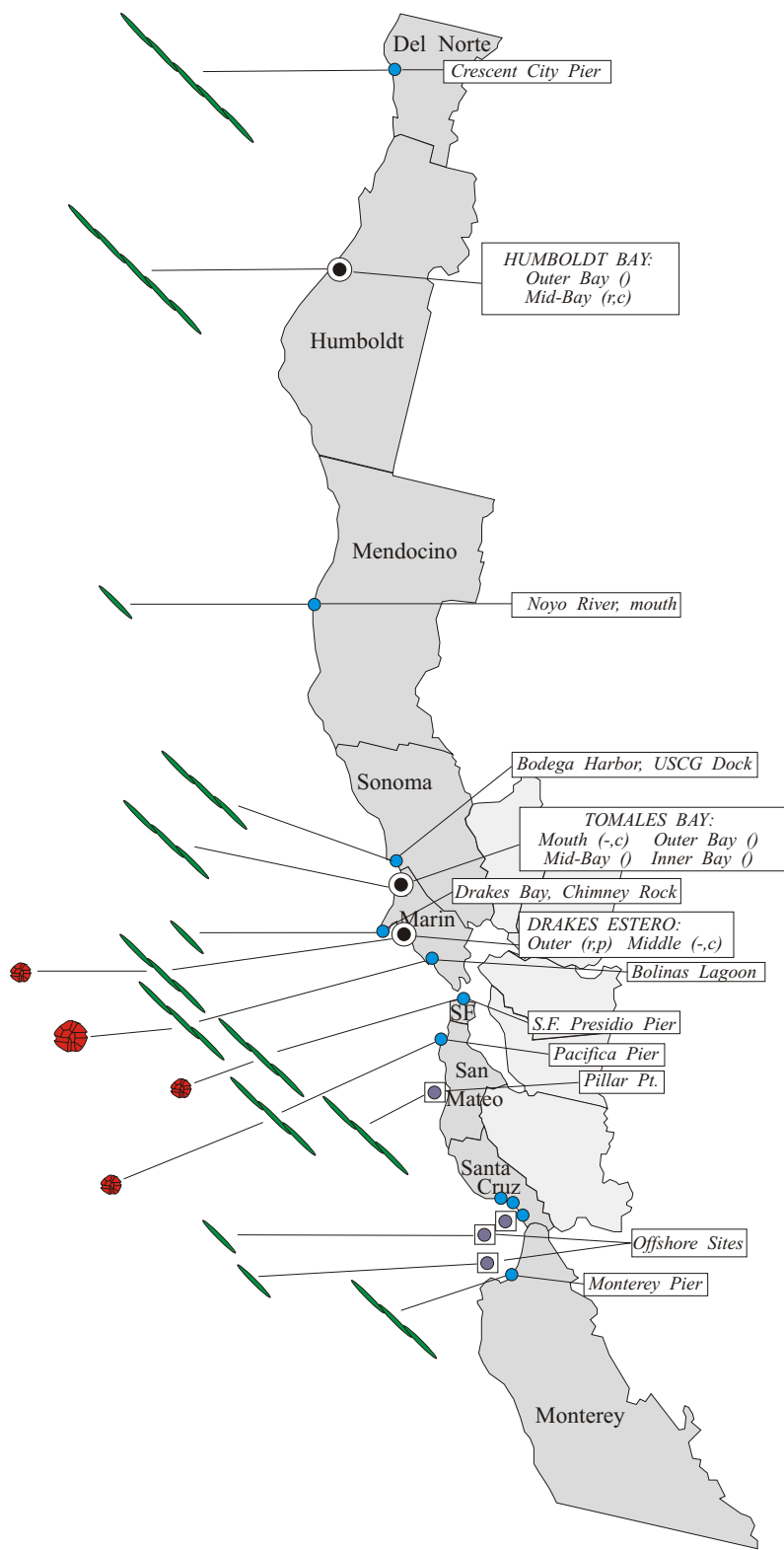
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (less than 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

#### MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:  
(a,p) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.  
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 2. Distribution of toxin-producing phytoplankton in Northern California during November, 2003.



(Continued from Page 1)

dinoflagellate species were observed at the Cal Poly Pier in Avila at the end of the month. Very low numbers of *Alexandrium* were also detected at South Carlsbad State Beach (San Diego County) at the beginning of November.

PSP toxins were not detected at any Southern California site during November.

#### Domoic Acid:

The distribution and relative abundance of *Pseudo-nitzschia* decreased in November at most locations along the Southern California coast compared to October's observations (Figure 1). However this diatom was common offshore of Diablo Cove and remained at a high relative abundance at the Cal Poly Pier in Avila, although cell mass was reduced from October's samples.

Domoic acid (48 ppm) was detected in a sample of lobster viscera collected on November 2 from Anacapa Island offshore of Ventura County (Figure 3).

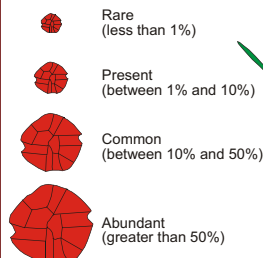
#### Nontoxic Events

Remnants of the extensive fall dinoflagellate blooms continued through November along much of the Southern California coast. *Lingulodinium polyedrum* was common along most of the coastline from San Luis Obispo through San Diego. A mix of other

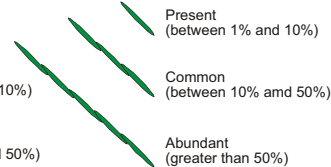
(Continued on Page 3)

#### Relative Abundance of Known Toxin Producers

##### Alexandrium Species



##### Pseudo-nitzschia Species



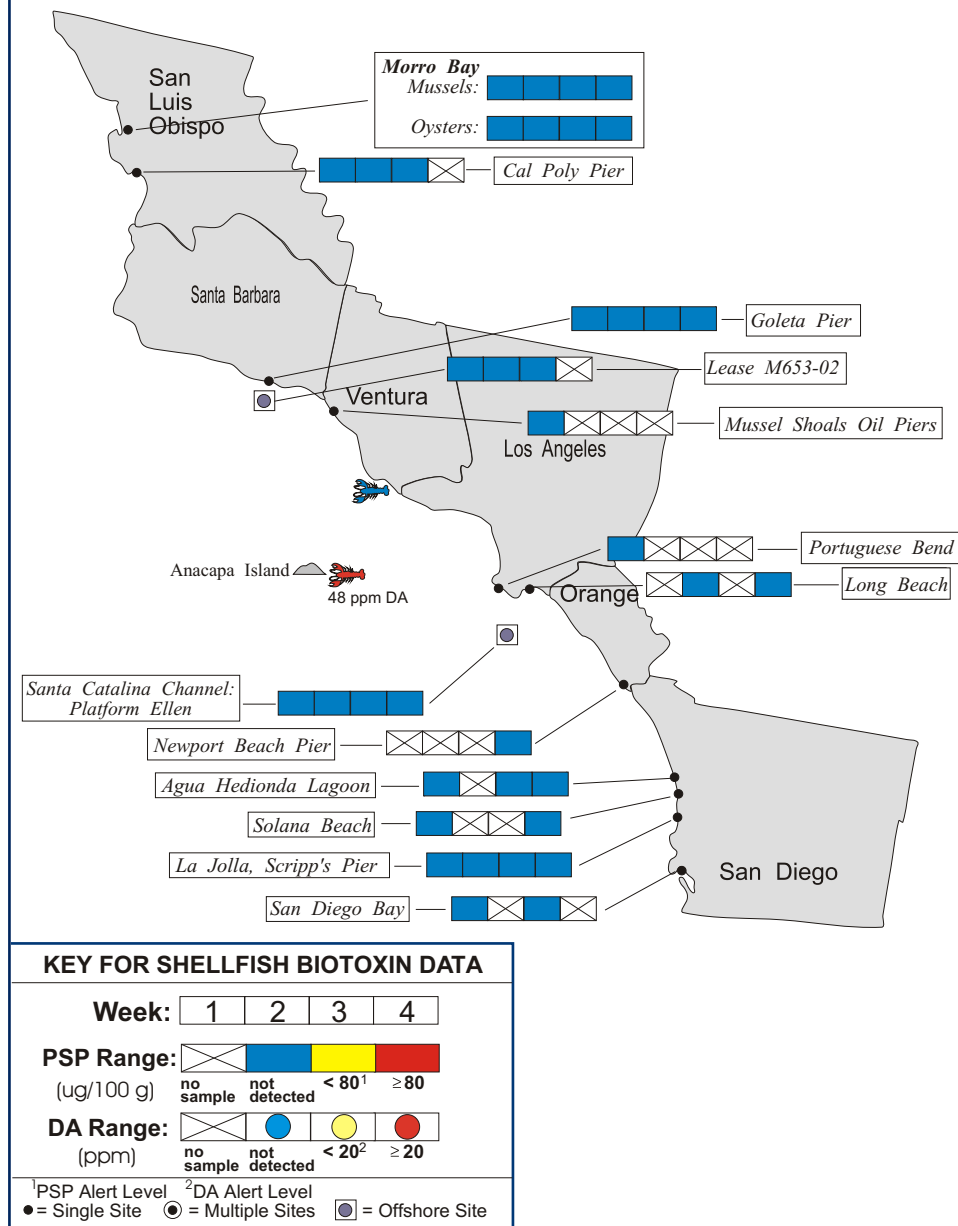
#### MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:

(A,P) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.  
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 3. Distribution of shellfish biotoxins in Southern California during November, 2003.



(Continued from Page 2)

dinoflagellate species and diatoms was observed as well but in low numbers.

#### Northern California Summary:

##### Paralytic Shellfish Poisoning:

The relative abundance of *Alexandrium* decreased throughout Northern California in November (Figure 2). This dinoflagellate was observed at sites between San Mateo and Marin counties, with the highest relative abundance detected in a sample from Bolinas Lagoon on November 19.

PSP toxins were detected along the entire Northern California coastline in November. Low concentrations of PSP toxins were detected at Point St. George (Del Norte County) on November 23. These toxins persisted in Humboldt Bay through the middle of the month (Figure 4), continuing a pattern that first began in July. Farther south, along the Mendocino coast, the elevated level of PSP toxins detected in September (1600 ug) and October (147 ug, October 27) finally decreased below the federal alert level. A mussel sample from the Fort Bragg region, collected on November 10, contained 59 ug of PSP toxins. We would

(Continued on Page 4)

The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Health Services, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public health is threatened.

For More Information Please Call:  
(510) 412-4635

For Recorded Biotoxin Information Call:  
(800) 553-4133

(Continued from Page 3)

like to thank the efforts of the Mendocino County Environmental Health Department for their continued sampling efforts throughout this toxicity event, which extended beyond the normal termination of the annual mussel quarantine at the end of October.

PSP toxicity increased to 80 ug in a mussel sample from Bodega Harbor (Sonoma County) on November 10, decreasing to 49 ug by November 18.. Southward in Marin the elevated levels of PSP toxin concentration detected in October persisted through the first week of November. Mussels at the sentinel station inside Drakes Estero contained 111 ug of PSP toxins on November 3, decreasing to 56 ug by November 11. Low PSP toxin concentrations continued in Drakes Estero throughout the month. Low levels of PSP toxins were also detected inside Tomales Bay through November 18 and farther south at locations along the San Mateo and Santa Cruz coast, including sites inside Monterey Bay.

#### Domoic Acid:

*Pseudo-nitzschia* continued to be present along the entire Northern California coastline during November (Figure 2). The relative abundance and distribution of this diatom was similar to observations in October. The highest relative abundance of this diatom was observed inside Humboldt Bay (November 4). Although *Pseudo-nitzschia* was common at most locations, the overall density was low.

#### Nontoxic Events

Diatoms such as *Chaetoceros* and *Ditylum* dominated the north coast between Crescent City and San

(Continued on Page 5)

Figure 4. Distribution of shellfish biotoxins in Northern California during November, 2003.

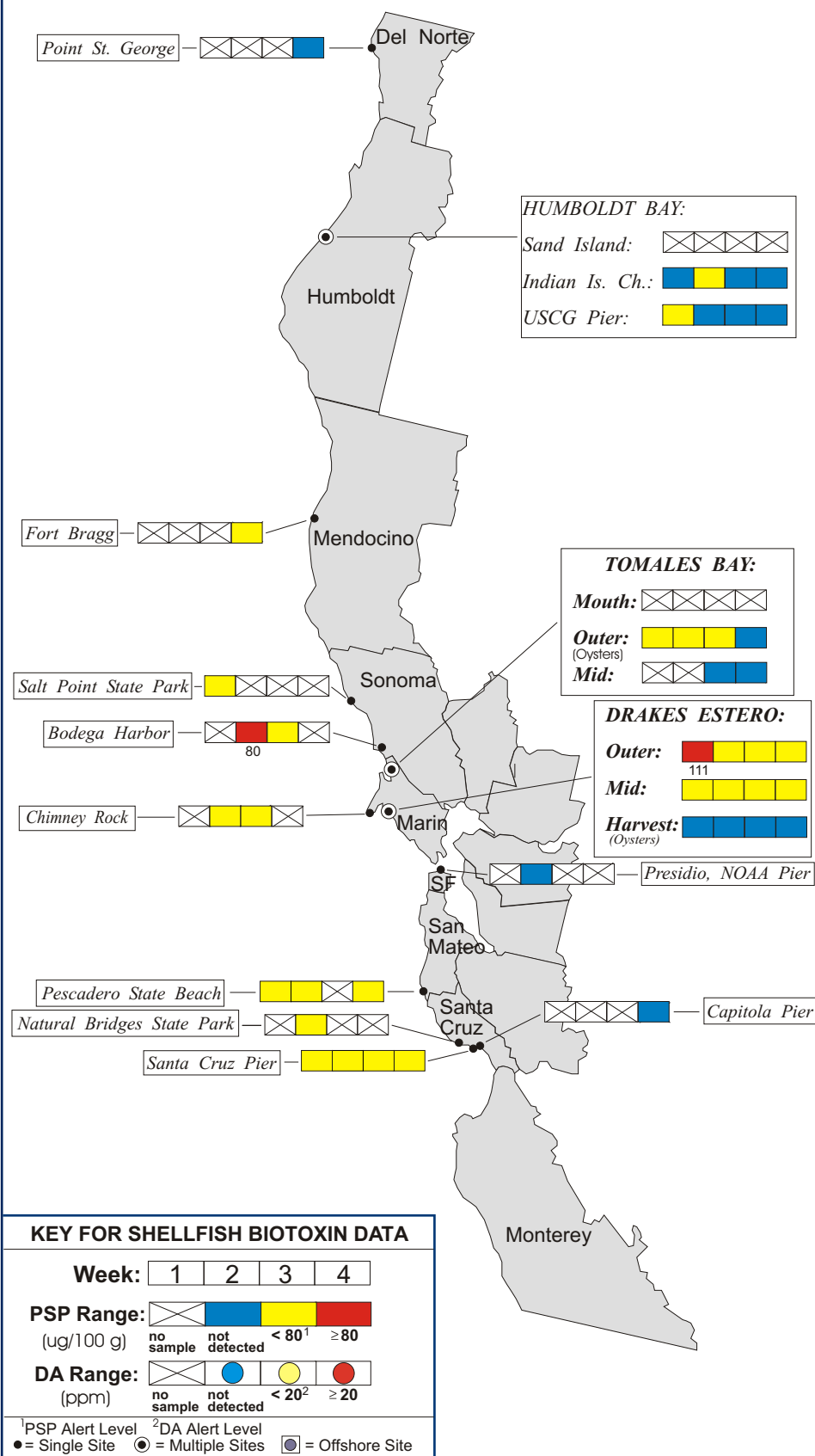


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during November, 2003.

COUNTY	AGENCY	# SAMPLES
<b>Del Norte</b>	Del Norte County Health Department	1
<b>Humboldt</b>	Coast Seafood Company	8
<b>Mendocino</b>	Mendocino County Environmental Health Department	1
<b>Sonoma</b>	Sonoma County Environmental Health Department	1
	CDHS Marine Biotoxin Program	1
<b>Marin</b>	Cove Mussel Company	2
	Hog Island Oyster Company	2
	Johnson Oyster Company	32
	Marin Oyster Company	5
	CDHS Marine Biotoxin Program	2
<b>San Francisco</b>	San Francisco County Health Department	1
<b>San Mateo</b>	San Mateo County Environmental Health Department	3
<b>Santa Cruz</b>	U.C. Santa Cruz	4
	Santa Cruz County Environmental Health Department	2
<b>Monterey</b>	None Submitted	
<b>San Luis Obispo</b>	Williams Shellfish Company	10
	U.C. Santa Barbara Marine Science Institute	3
<b>Santa Barbara</b>	Santa Barbara Mariculture Company	3
	U.C. Santa Barbara Marine Science Institute	4
<b>Ventura</b>	Ventura County Environmental Health Department	1
	CDHS Marine Biotoxin Program Volunteer (Bill Weinerth)	3
<b>Los Angeles</b>	Los Angeles County Health Department	1
	Aquarium of the Pacific Long Beach	4
<b>Orange</b>	Ecomar, Inc.	4
	Orange County Health Care Agency	1
<b>San Diego</b>	Carlsbad Aquafarms, Inc.	3
	Scripps Institution for Oceanography	4
	U.S. Navy	2
	CDHS Marine Biotoxin Program Volunteer (Paul Sims)	2

(Continued from Page 4)

Francisco. Dinoflagellates were common inside Tomales Bay (*Gymnodinium sanguineum*) and Bolinas Lagoon (*Ceratium furca*).

#### QUARANTINES:

The annual quarantine on the sport-harvesting of mussels, which normally goes into effect each year on May 1st and ends at midnight on October 31st, had been extended due to the dangerous levels of PSP toxins detected at the end of October. Continued monitoring demonstrated that toxin concentrations declined throughout November and remained at safe or undetectable levels by the middle of the month. On November 21 the state Health Director ended the quarantine extension. This annual quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries. This quarantine does not affect the commercial shellfish growing areas in California. All commercial shellfish growers certified by the State of California are required to submit routine samples for biotoxin analysis, allowing us to closely monitor for the occurrence of any toxin. Harvesting closures are imposed if toxin levels reach the federal alert level.

Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. Persons taking any clams or scallops are advised to remove and discard the dark parts (i.e., the digestive organs or viscera).

Contact the Department's "Shellfish Information Line" at 1-800-553-4133 or (510) 412-4643 for a current update on marine biotoxin activity.





Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during November, 2003.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	4
Mendocino	CDHS Volunteer (Amy Johnson)	1
Sonoma	CDHS Marine Biotoxin Program	1
Marin	CDHS Volunteers (Brent Anderson, Cal Strobel)	6
	Johnson Oyster Company	13
	CDHS Marine Biotoxin Program	1
Contra Costa	None Submitted	
San Francisco	CDHS Volunteer (Eugenia McNaughton)	4
San Mateo	San Mateo County Environmental Health Department	4
Santa Cruz	Santa Cruz County Environmental Health Department	6
Monterey	CDHS Volunteer (Jerry Norbun)	3
	Pacific Cetacean Group	2
San Luis Obispo	CDHS Volunteers (Rene and Auburn Atkins)	5
	Morro Bay Natural History Museum	2
	Tenera Environmental	3
	U.C. Santa Barbara Marine Science Institute	2
Santa Barbara	U.C. Santa Barbara Marine Science Institute	3
	Santa Barbara City College	1
	Santa Barbara Mariculture Company	3
Ventura	Ventura County Environmental Health Department	1
Los Angeles	Los Angeles County Sanitation District	4
	Catalina Tall Ships Expedition	3
	Aquarium of the Pacific Long Beach	2
	Los Angeles County Health Department	2
Orange	Orange County Sanitation District	4
	Ocean Institute	1
San Diego	San Diego County Environmental Health Department	3
	CDHS Volunteer (Paul Sims, Jeff Kermode)	5
	Scripps Institute for Oceanography	4

## PHYTOPLANKTON GALLERY



*Pseudo-nitzschia* remained the most abundant species inside Humboldt Bay through November, although the densities decreased throughout the month. *Ditylum*, a nontoxic diatom, was also common along the Northern California coast.



A less common member of the phytoplankton during November, this *Ceratium* species was observed in samples collected near Catalina Island.



The red tide dinoflagellate *Lingulodinium* persisted along the Southern California coast in November, with other dinoflagellates like *Ceratium furca* increasing in numbers.